



ADAPTATION FUND

# Adaptation Story

## CHILE



**S**mallholder farmers in some of the driest, most vulnerable rural communities in the mid coastal and inner O'Higgins Region of Chile who have been increasingly impacted by rain scarcity and droughts in recent years are adapting to climate change by managing water and enhancing their crops in innovative ways.

*"Previously I couldn't have the crops that I have now because of the lack of water. I believe climate change has affected the quantity of water a lot because it has diminished by an extremely large amount. But with this drip irrigation system, I take maximum advantage of the water so I have better production. It's very good,"* says **Eliana Palma**, standing in front of a rainwater catchment tank on her farm in Litueche – one of eight Chilean municipalities benefiting from a project funded by the Adaptation Fund and implemented by its national implementing partner, Chile's Agency of International Cooperation and Development (AGCID).

**US\$ 9.9 MILLION**

### Direct Access project

- Builds climate change resilience capacity and training systems through sustainable farming practices in vulnerable rural farm communities, including water, soil, crop and cattle management
- Implements measures and technologies to increase availability of water resources
- Improves decision-making through agroclimatic information management systems for farmer communities and local government professionals

*"I put out a bigger variety of vegetables now, which is healthier.*

*The greenhouse increased production and made the product nicer. The production was very little before and tomatoes were very small because I didn't have enough water."*

– Eliana Palma, farmer, Litueche



The project supports Palma and over 2,000 other farmers through technical support, access to innovative machinery, and deployment of rooftop rainwater harvesting tanks, drip irrigation systems, and greenhouses to develop more resilient, diversified crops for family consumption and the local market.

Palma has expanded the variety and quality of products she produces, while reducing land degradation and learning to manage the health of her crops, water and soils sustainably.

Droughts had also affected nearby strawberry farmer **Hernán González Vidal**, but the project has given him optimism. He received training and support for efficient level-controlled drip line irrigation techniques and water conserving measures like plastic-wrapped rows to keep crops moist. *"Production is much better. It's a very good technique, and it's a technique that gives one confidence,"* he said.

Farmers in another area of the project, Marchigue, experience similar success. **Jacqueline Becerra Venegas** sees marked improvements on her farm that have helped her adapt. *"Rain had decreased so much that we couldn't use it for vegetables because we used all of it for potable water,"* she said. *"This project has been spectacular. To be able to take advantage of drip irrigation, we can maintain a plant in a good state and make good use of it. The project is very good, just brilliant, brilliant, brilliant."*

Venegas has diversified her products and has enough water for plants and livestock. The greenhouse provides shelter, the right temperature and empowers her with better control over her garden which grows for longer periods and produces better quality vegetables, whereas before her crops were always at risk of drying up or freezing on the open land. *"It's given me more production,"* she said. *"You can control the drip system, so the water lasts longer."*

The first adaptation project in the country, the project is aligned with Chile's national adaptation plans and involves several local partners as it builds the country's capacity to confront climate change. Among them is INIA, an agricultural institute that develops technology for use by small farmers in the project that can also be replicated in other parts of Chile similarly affected by climate change.

Among the innovations deployed are a fog-catcher, which utilizes a large screen to convert night mist into usable water; subsoil plows to perform minor tillage,



Top: A rooftop water tank (front) and a fogcatcher at INIA demonstration site. Bottom: Hernan Gonzalez pictured with rows of strawberry plants in Litueche.



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Left: A subsoil plow at INIA demonstration center shows how tillage creates space for water to permeate the ground. Right: Jaqueline Venegas tends to her greenhouse in Marchigue.

improve soil fertility, retain water and prevent erosion; and various rainwater capture and storage cisterns. **Jorge Carrasco**, INIA's Senior Agronomy Engineer, said rainfall has decreased by about half in the last decade. "Last year here in this zone it was the driest year in the last 20 years. So, across the project we are developing and providing distinct technologies that permit farmers to confront in the best way the problem of climate change, including techniques that are oriented to the catchment of rainwater made on the roofs of the houses of the farmers," he said.

A typical 30-square meter roof on a local farmhouse can produce 30 liters of water from just one millimeter of rain. "One can capture a lot of water during a year that way," Carrasco said.

Rooftop water storage systems will benefit about 600 farming families in the project, and more than 3,000 across Chile through replication activities.

**Sebastian Gonzalez Ordanes**, whose family cattle-raising farm in Marchigue suffered from lack of rain and forage, said the project is helping farmers turn the corner and restoring water security. "The project has helped with training, it provides incentive to realize your labor and how to better access the little rainwater there is.

The subsoil plow and cisterns are now commonly used," Ordanes said.

The project further provides agrometeorological information in user-friendly formats to local farmers, who meet regularly to review it with experts and apply it in practical ways. This is critical since the zone's hilly, rural terrain makes Internet access unreliable. "People live far away from one another. The meteorological station helps to obtain good accessible information about the zone on rainfall and temperatures. I believe it is one of the great ways to get information to the greatest number of people possible," said Ordanes outside a Marchigue meeting house. "Farmers can also pass on good practices to their neighbors here."

Chile approaches the project with an eye toward the future, creating

## BY THE NUMBERS

10,331 DIRECT BENEFICIARIES 41,324 INDIRECT BENEFICIARIES  
OF THE PROJECT (31% WOMEN)

558 DIRECT BENEFICIARIES, AT LEAST 318 WOMEN, WITH WATER HARVESTING CAPABILITIES AND TRAINING

HOUSEHOLD INCOME INCREASED BY AT LEAST  
US\$1,000/YEAR  
AMONG 4,988 VULNERABLE FARMERS

AT LEAST  
5,000 HA  
WITH IMPROVED SOIL QUALITY

AT LEAST  
5,767  
FARMERS (1,806 WOMEN)  
IN EIGHT MUNICIPALITIES  
WITH REDUCED RISK FOR EXTREME  
WEATHER EVENTS

AT LEAST  
2,208  
FARMING  
HOUSEHOLDS  
(691 WOMEN)  
TRAINED WITH  
ACCESS TO  
MACHINERY POOLS

OVER  
255  
OFFICIALS FROM  
13 INSTITUTIONS  
TRAINED TO MINIMIZE  
EXPOSURE TO  
CLIMATE RISKS

rural classrooms where youth benefit from curricula on agriculture. It incorporates more women in project activities, while studying climate change impacts on women and how to improve their resilience. Palma also meets regularly with 20 other female farmers to exchange tips and lessons learned.

"It's an innovative project," says **Gladys Santis García**, an adaptation official in Chile's Ministry of Environment who served as Chile's Designated Authority for the Adaptation Fund. "We are very grateful with the Adaptation Fund for giving us this golden opportunity that we didn't have before. We have the certainty that this project is going to benefit our country. It is very beautiful to see. It is for the people who are among the most vulnerable economically who are inside the vulnerable areas affected by climate change, so it is very satisfying to see the things you planned are now taking action. We'll also share the results so other people can benefit."

Beneficiary farmers say they share the techniques they learn, as well as water and food they save through the project with neighboring farms. AGCID and executing partners in the Ministries of Agriculture and Environment plan to disseminate project successes and upscale or replicate them in other dry regions by bringing some of the farmers to further pass on that knowledge.

**"The water level was decreasing much more in recent years. The project has lowered my costs. Now I'm producing oil and certain olives to eat and my production was good for blueberries this year. From here on, I hope to keep producing more."**

— Jose Campos, farmer, Marchigue